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(12) United States Patent  
Katz(10) Patent No.: US 6,229,481 B1  
(45) Date of Patent: May 8, 2001(54) METHOD OF IMPROVING QUALITY OF  
RADIO CONNECTION

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## (57) ABSTRACT

The invention relates to a method of improving the quality of a radio connection (170) in a cellular radio network. Relevant for the invention, the cellular radio network includes a base station system (126) and a subscriber terminal (150). A bi-directional radio connection (170) using a directional antenna beam (304) is provided between the base station system (126) and the subscriber terminal (150). In the method, in the base station system (126) an angle of incidence (302) of the directional antenna beam (304) is formed on the basis of a received radio signal (170A) transmitted by the subscriber terminal (150). The base station system (126) transmits a radio signal (170B) to the subscriber terminal (150) in the direction of an angle of departure (308) formed on the basis of the angle of incidence (302). In accordance with the invention, a ratio is formed for the imbalance between the downlink and uplink traffics. The processing of the directional antenna beam (304) of the radio signal (170A, 170B) is controlled on the basis of the formed ratio.

angle  
& form  
by beam,

48 Claims, 5 Drawing Sheets

